The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

IN THE MATTER OF THE GAS RESOURCES PRESERVATION ACT

AND IN THE MATTER of a Joint Hearing to determine various questions relating to the proposed Export of Natural Gas from the Province of Alberta.

I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session: December 4th, 1951.

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W I T N E S S E S

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MR. MACLEOD: I propose to call Mr. K. D. Rodebaugh to deal with the balance of the submission.

K. D. RODEBAUGH, having been first duly sworn, examined by Mr. Macleod, testified as follows:

Q The Board, I presume, knows Mr. Rodebaugh's qualifications. Mr. Rodebaugh, what is your profession?

A Natural gas engineer.

Q And you have to do with pipelines?

A Pipelines, yes, sir.

Q Would you look at this Exhibit 79, please.

A Yes, sir.

Q You have prepared the portion of this brief dealing from page 9 onward?

A That is correct.

Q Dealing with (c) and (d)?

A That is correct.

Q Would you read, then, beginning with page 9, Mr. Rodebaugh, please.

A Starting on page 9?

Q Yes.

A (c) LOCATION, DESIGN AND CAPACITY OF THE PROPOSED GATHERING AND TRANSMISSION SYSTEMS.

Map Showing Fields, Proposed Pipe Lines and Wells

The following map shows the geographical

location of the producing fields, the present producing wells and the proposed wells to be drilled, and the gathering lines now under construction and required for the first year of operation.

Q Mr. Rodebaugh, in examining that I do not find any proposed wells. Would you look at it and see if they are shown? Perhaps they are.

A I believe the proposed wells are shown in parentheses.

Q In brackets?

A That is right.

Q All right. Go ahead.

A <u>Flow Charts Showing Peak Day Deliveries to Montana in the First and Fifth Years of Operation.</u>

The following two charts show sizes and lengths of all lines in the gathering system together with operating pressures and quantities through all sections of these lines for the first and fifth years of operation.

The size and length of the transmission system from the Pakowki Area to Cut Bank is also shown together with quantities and operating pressures. Capacity and pressure calculations were made by the Panhandle formula.

Q Now, have you any comments?

A I think that explains pages 10, 11 and 12.

Q Have you any comments to make on those charts?

A No. I think the explanations I have just read explain it.

(d) ESTIMATED CAPITAL COSTS AND COST OF GATHERING AND TRANSPORTING GAS.

The following summaries show the economics of transporting gas from the well head to the Canadian-U.S.

border in the first and fifth years of operation of the system.

Capital costs of all of the proposed facilities have been set forth together with fixed charges and costs of operation and maintenance of the system.

The estimated cost of construction of the proposed 1760 HP compressor station at Pendant d'Oreille is shown in detail on page 17.

Estimated cost of construction of all the different sizes of pipe lines contemplated in this application are also shown in detail on pages 16 and from pages 18 to 21. I think all of those exhibits are self-explanatory.

Q With regard to these costs, Mr. Rodebaugh, are they estimates or actual?

A About 90 per cent are actual and about 10 per cent are estimates.

Q How would you divide them? I mean, what are actual and what are estimates?

A The major items of costs are all actual including the pipe and the contract costs which comprise the biggest part of the estimates. Things like survey and rights-of-way, the final costs of those, have not been obtained and they are estimates based upon the experience of the Montana Power Company.

THE CHAIRMAN: Does anyone wish to question Mr. Rodebaugh?

CROSS-EXAMINATION BY MR. NOLAN:

Q I wanted to ask the witness, if I might, sir, and it is not here, I don't think, what was the price in these estimated costs of steel pipe per ton?

A How would you like to have that, Mr. Nolan?

Q Well, I am afraid I do not know how I would like to have it.

A I can give it to you three different ways, per 100 feet, per mile or per ton.

Q Per ton?

A 4½ inch, $236.40 per ton; 6-5/8, $237.94 per ton; 10¾, $238.46 per ton; 12¾, $232.96; 16 inch, $228.89 per ton.

Q Are these actual prices quoted to you?

A They are actual prices, not only quoted but paid.

Q Through the regular channels?

A Well, I don't know what you mean by regular channels.

Q Well, there is a market for steel pipe?

A Don't know anything about that. There might be, I don't know.

Q This has nothing to do with that?

A No, sir.

Q DR. GOVIER: Those are freight inclusive prices?

A They are freight prepaid.

CROSS-EXAMINATION BY MR. McDONALD:

Q How many thousand tons was comprised in your order, do you know, Mr. Rodebaugh?

A No. I can give it to you in miles, if that would be satisfactory, but not in thousands of tons. Do you want it in

miles?

Q I thought the total accumulated amount for your entire order?

A I can give it to you by sizes and miles and you can figure it out.

Q You can give it to me that way, then.

A 15 miles of 16-inch; 32½ miles of 10¾; 8½ miles of 6-5/8; 23½ miles of 4½-inch; and 11,000 feet of 12¾.

Q Thanks.

A That is for the Canadian, north of the border.

Q DR. GOVIER: I think you mentioned 12¾ twice, Mr. Rodebaugh.

A If I did, I made a mistake. I think I said 10¾.

Q MR. MACLEOD: That includes both gathering and transmission?

A That is right.

Q MR. MARTLAND: Can you give us the cost exclusive of freight?

A I don't have the freight.

Q The freight is from where to where?

A I say, I don't know the freight. The pipe was purchased freight prepaid.

Q Delivered to where?

A Manyberries.

Q MR. S.B. SMITH: Mr. Rodebaugh, have you got any figure to give us for the cost of the 16-inch less freight?

A No, sir.

Q Would it be possible for you to get it?

A No, sir, I don't think it would. The quotations were received from manufacturers freight prepaid.

Q You can not tell us where it comes from?

A Yes. It was purchased from the James Robertson Company Limited, Montreal, Canada.

Q MR. McDONALD: I think the 10 per cent sales tax would be on that?

A No, that is included.

EXAMINATION BY MR. C.E. SMITH:

Q Mr. Rodebaugh, I was interested in finding a figure for a field price of gas. Where do we go to locate that?

A I don't have any figures on that, sir.

Q Then supposing we are interested in finding a field price and then finding additional costs to the end of the line or to the consumer, how do we go about it? Is there anything in this exhibit?

A No. The only thing I have computed has been the gathering costs, that is, from the producing wells to the transmission system.

Q You can not help me if I want to find a field price for this gas, say, at Pakowki or anywhere else, is that correct?

A Yes, sir.

Q I am not sure whether I should find it myself in some other exhibits. Probably Mr. Macleod could tell me. Is there any method of locating that, if I may ask counsel.

MR. MACLEOD: I do not think it has been

determined yet, as a matter of fact. You understand, the gas passes from one subsidiary to another, as far as I know.

MR. C.E. SMITH: Some here, some down in the States. I was wondering if we could have your costs similar to other people who put in their field price.

MR. MACLEOD: The only information I have now is that the producing company gathers it and delivers it into the transmission pipeline. It has not been worked out as far as I know.

MR. C.E. SMITH: The contract won't help us, would it?

MR. MACLEOD: No.

Q MR. C.E. SMITH: Probably I should not ask you this, either, but is there any bond issue involved in this proposition?

A THE WITNESS: That is something I am not familiar with.

Q That is something I should have asked somebody else, is that correct?

A I think that is correct.

Q And that being so, may I just refer you to page 15 and with regard to your pipe mileage, do I check your 34, 16, 31, 2 and so on, with your summaries following page 15?

A Yes, that is correct.

Q The reason I ask you that, your 24.4 for 4½, if I read page 21 correctly, we have 21.93 instead of 34.4. Is there an error or am I not reading properly?

A One is fifth year and the other is first year, I believe.

Q Well, if the rest of your summary is figured out properly, I do not quite follow that.

A In the first year of operation the figure is 25.9 miles of 4½ inch. Now, in the fifth year the total miles of 4½ inch is 34.4, the difference being that which was laid in the first four years.

Q Does that also apply to the very slight differences throughout the summary?

A That is correct, sir. In other words, there were a few more wells drilled during the first five years and they had to be connected up, so there is an increase in the mileage of gathering lines.

Q Then going to your second column on page 15, under the second paragraph, Investment, you have already dealt with the question of duty, but is there anything in there that takes care of sales tax, both Dominion and Provincial?

A Yes, both the Provincial 5 per cent tax and the Dominion tax has been included in the investment. It was included in the cost of pipe and also in all of the other costs.

Q I mean, you say that it is included. What did you say, 5 per cent?

A No, I was thinking about the income tax, but the sales tax has been included in all cases in the investment cost.

Q And is there any place where it is set out as to percentage or anything to find out how you do it?

A No, sir. As I said, the pipe was purchased freight prepaid and also all taxes prepaid. In other words, the price of pipe I have given you includes all the taxes, and that applies to the pipe coating and all the other

items of capital cost.

Q Does your quotation that you received set out these things individually?

A No, sir, it does not. It just says that price is to include all sales taxes and freight.

Q So all you got was a figure from somebody that gives all of these things we mentioned, is that the idea?

A Yes, sir.

Q Which figure is shown here in your calculation?

A That is correct.

Q Now, in the next paragraph, "Gathering and Transporting Costs", probably a minor thing, but in your compressor fuel costs, does that include operation and maintenance? Does that include cost of your compressor fuel?

A Yes, that includes the cost of compressor station fuel.

Q Well, have you any figure that will give your estimate of that cost of fuel?

A I believe so. The cost of the compressor station fuel in the fifth year is $3,400.00. Now, naturally, in arriving at that figure, I had to assume a field price of gas and it was an assumption only, and for that figure I used 12 cents.

Q We have got back where I started, to some extent, is that right?

A As I say, that is merely an assumed figure and the amount is small, so a cent or two one way or the other would not have too much effect on the ultimate result.

Q Well, have you anything further to say with regard to your assumed figure of 12 cents?

A No, I just picked it out of the air.

Q You would not assume it for anything else but compressor fuel?

A That is right. 12 cents just seemed to be a reasonable figure.

Q But we must not assume that that is to be taken with respect to any other calculations, is that correct?

A That is correct.

(Go to page 2402)

Q Now, Mr. Rodebaugh, notwithstanding the bond issue and so on, can you give me a figure that you would use with respect to your rate base?

A Do you mean on the investment?

Q For the rate base, Mr. Rodebaugh?

A For the rate base?

Q Yes?

A The undepreciated rate base?

Q Yes, that is the figure that you would use on the total investment of the undepreciated rate base?

A Yes, that is the basis of the figures I have shown.

Q And that is the basis of your figures that you show at the bottom of the third paragraph, is it?

A That is correct, yes, sir.

Q Your return?

A Yes, sir, that is right.

Q Excuse me a minute. Oh, yes, there is another question. Is there anything specific, Mr. Rodebaugh, in exhibits of McColl-Union which show the cost of transportation from the border on to the distributing market?

A There is nothing.

Q There is nothing in this?

A Nothing in this exhibit, no, sir. I have, however, computed that figure.

Q Will that be given to us, Mr. Macleod?

MR. MACLEOD: If Mr. Rodebaugh can give it.

Q MR. C. E. SMITH: Quite frankly, along the lines which I first suggested, we do want to find out the cost of what I might call the "end of the line". I was not too sure but that

some other exhibit may have had it?

A No, sir, it has not been submitted.

Q I take it it would be too much bother to try and submit it now for the record from your working papers.

A I have it here summarized very similar to the exhibit on page 15.

MR. C. E. SMITH: I wonder if by chance that could be prepared and submitted sometime, Mr. Macleod? Might that be, Mr. Macleod?

MR.MACLEOD: I presume it could for the purposes of the record, if it is required.

MR. C. E. SMITH: It has been done by everybody else.

MR.MACLEOD: Perhaps you might get it from the examination of Mr. Rodebaugh, and then I would not have to recall him.

MR. C. E. SMITH: Well, can you read it into the record, Mr. Rodebaugh?

A Yes, I would be very glad to read that into the record.

Q If that suits the Board?

A This is a summary entitled "Estimated Cost of Transporting the Pakowki Area Gas from the Canadian-U.S. Border to Cut Bank, Montana, the 5th Year Operation", and under the heading "Statistics", Maximum Day Delivery to Cut Bank 58,000 Mcf, Annual Delivery to Cut Bank 11,795,000 Mcf, Pressure Base 14.9 p.s.i.a., Load Factor 56%, Pipe Line, 16-inch, 52.3 miles.

The next heading is underscored as "Investment", and for Pipe Lines $1,838,800.00, General Property $36,800.00, Working Capital $22,900.00, Total

$1,898,500.00.

The next heading is underscored as "Transportation Costs", Operation and Maintenance $21,000.00, Administrative and General $11,600.00, Ad valorem and Miscellaneous Taxes $32,800.00, Depreciation $56,300.00, Income Tax $79,700.00, Return $123,400.00, Total $324,800.00. Per Mcf. of gas delivered to Cut Bank $.027.

Q I take it, Mr.Rodebaugh, having regard to Exhibit 79, on the last line of page 15 again, "Per Mcf. of Gas delivered at Border", you have .032 and .019, that is gathering and transmission, and your .027 would complete those figures to that extent to Cut Bank?

A That is correct, yes, sir.

Q And we are still without the price of gas?

A Yes, sir.

.....

CROSS-EXAMINATION BY MR.MILVAIN:

Q There is one question occurs to my mind, Mr.Chairman, if I might ask the witness.

THE CHAIRMAN: Yes.

Q MR.MILVAIN: I notice,Mr. Rodebaugh, at page 12 of your Exhibit 79, you will notice there is a square there dealing with the Pendant d'Oreille compressor station?

A Yes, sir.

Q And I notice that the horsepower required is 880 and the horsepower installed is 1760?

A That is right.

Q What was the reason for installing double the required

horsepower?

A There is a spare unit there. In my judgment, considering the market, the load and the type of service that this line will have to give, there should be a spare unit there.

Q Was it put there in speculation that the service of the line might be increased into other areas?

A Not necessarily, no, sir.

Q Thank you.

.....

CROSS-EXAMINATION BY MR.MAHAFFY:

Q Mr.Rodebaugh, you were discussing with Mr.Smith the price of gas in the field?

A Yes.

Q I wonder if I could ask you one additional question on that score, namely, on what basis will royalties be paid in the field?

A I have no idea, sir.

Q Is that because that is a branch of the business that you are not familiar with?

A That was outside of my assignment. My assignment dealt only with the gathering system and the transmission system.

Q I see. So that it would be some other official that would have to give that?

A I am afraid so.

Q Another point, on page 15, Mr. Rodebaugh, you show the cost of gathering the gas as .32. Of course, that is on the assumption that this permit, additional permit, is granted, is that right?

A Yes, that is correct.

Q The larger volume of gas?

A Yes.

Q What would that figure be on the basis of the gas for which you already hold a permit?

A I have no idea.

Q You have not figured that out?

A No, sir.

Q The line, as I understand it, has already been practically completed?

A I believe so.

Q Is that right?

A Yes.

Q And you say you have no figures on what the cost of gathering and transmission would be on the basis of the permit granted?

A No, sir.

Q Aren't you concerned about that when you build the line?

A Well, as I said, it was a little outside of my assignment and I just don't know.

Q Is it an economic operation on the basis of the permit that you have?

A I do not know.

Q You do not know?

A No.

Q Have you any idea?

A I have never given it a thought.

Q I see. You just assumed there would be further gas coming?

A Well, I assumed that the Company at one time or another has certainly made economic studies based upon the facilities needed under this limited permit.

Q Thank you, that is all.

.....

RE-EXAMINATION BY MR. MACLEOD:

Q May I ask a question, sir?

THE CHAIRMAN: Yes.

Q MR.MACLEOD: Mr.Rodebaugh, you are not an employee of the Montana Power Company or any affiliate?

A No, sir.

Q You are a consulting engineer?

A I am a consultant working with the Montana Power Company.

Q In this matter?

A Yes, sir.

Q And your assignment has been what?

A My assignment has been to estimate the capital costs involved in the facilities shown in here in these exhibits, and to figure the gathering costs and the transportation cost.

Q On the basis of the application?

A On the basis of the application, yes, sir.

.....

EXAMINATION BY DR. GOVIER:

Q Mr. Rodebaugh, could you tell us whether the cost data for the Pendant d'Oreille compressor station is actual or estimated?

A That is estimated.

Q In your opinion, is the $258.00 unit cost about correct for the present-day costs and for a station erected in that area?

A Yes, sir. The Montana Power Company in the past year has

installed additional units at Cut Bank and they have also erected a compressor station Absarokee, Montana, and the actual costs incurred for these two stations were used as a basis for the estimate that we have presented here as being corrected for present-day prices.

Q That figure includes all related structures, etc., does it?

A That is correct, yes, sir.

Q Would you tell me, or can you give me a little of the detail, Mr.Rodebaugh, underlying the calculation of the last four items under the heading "Gathering and Transporting Cost" on page 15? That is the General Taxes, Depreciation, Income Tax and Return?

A Yes, for General Taxes I have used 1%, for Depreciation 3%.

Q 1% of what, Mr.Rodebaugh?

A General Taxes was 1% of the total physical plant, or the taxable property in the investment.

Q Yes?

A The Depreciation was 3% of that same figure. Income Tax was taken at 53%.

Q Yes?

A And Return was taken at 7%, based on the total investment.

Q Including Working Capital in the latter case?

A Yes, sir.

Q Mr. Rodebaugh, I was also interested in your comment in connection with the horsepower installation at the Pendant d'Oreille station, the fact that, in your opinion, a spare unit was necessary. Would you give us the benefit of your experience in that connection as related to compressor stations along a long transmission line?

A Well, I think that on a long transmission line, there should be sufficient capacity to take care of your base load, so that if any unit in any station went out, you could still carry your base load. To consider that, there is a lot of factors involved. It depends a lot upon how much you could pick up, if one particular unit went out at any station, how much you could pick up on your down-stream stations, and it depends on the number and the size of the units at the station. And there is just any number of variable things that would have to be taken into consideration before you determine how much spare capacity you would need.

Q Do you have in mind any percentage figure that would be a reasonable average to represent the amount of spare capacity?

A Well, I do not know about the - I think each case would certainly have to be studied and the thing decided on its own merits.

Q Yes?

A I know the last line I had any connection with in the design was the 30-inch line of Texas Eastern from Kosciouski, Minnesota, to Southwestern Pennsylvania, and on that particular line we had about 14% excess capacity. As I say, that could vary on all lines.

Q Would you say that, generally speaking, it would be good practice to have one spare unit at each station?

A No, sir, I would not say that.

Q You would not say that?

A No. I would say that after careful consideration, that you should add sufficient horsepower to take care of your

base load, so that if one particular unit did go out it would not work a hardship on your domestic customers.

Q Yes?

A That, again, goes back into the line factor, and there is just any number of factors. It also depends on how much industrial you could shut off in case of emergency.

Q When you say "base load", you mean the total load less any interruptible industrial load?

A Yes, any industrial, or any load that you could shut off in the case of emergency.

Q What type of emergency would you plan for, the possibility of an entire station going down, Mr. Rodebaugh?

A Well, that has happened, of course, any number of times, and, not only that, but one particular unit in any station might go down, and on a long transmission line ordinarily your down-stream stations could pick up that capacity that was lost by the one unit going down. In other words, all these compressors have, and I think the manufacturers will tell you that they have about 10% or so excess capacity built into them, so that it is just a matter of picking it up with this 10% excess capacity on your down-stream stations.

Q Would you think it would be wise to prepare for the possibility of a failure of a complete station on the coldest day when you are handling peak load?

A Well. . .

Q Would you do that yourself if you were designing that 30-inch line again?

A Well, of course, some lines, in their design, an entire station could go down and still maintain, and still you would not suffer, I mean, the loss of too much capacity.

Q Of course, that is the very thing we are talking about, isn't it?

A Yes.

Q The amount of over-design that is built into the system?

A Yes, that is right.

Q But, what I mean is, supposing you were starting from scratch in calculating, in making the design, would you, yourself, be inclined to provide sufficient over-capacity so that in the event of a failure of an entire station on the peak day, you could still meet the requirements, would you go that far, Mr. Rodebaugh?

A Well, that is a kind of a difficult question to answer. I go right back to what I did say, that I would first consider my load, how much industrial and how much interruptible could be shut off, without hardship, and the chances might be that that would be sufficient, you could cut off sufficient load so that one station could go down, and you could pick up additional capacity by your downstream station.

Q Well, let us suppose we do that then, we reduce the load to the base load on the peak day?

A Yes.

Q That is, we knock off all the interruptible load, which, I guess, would be knocked off anyway on a peak day, wouldn't it?

A Yes.

Q And on that basis would you attempt to design the line so that you could meet that reduced base load on a peak day, even in the event of the failure of one station?

A Yes, I think I would want to design the line so that even

if one station went down there would still be no hardship worked on the domestic consumer.

Q But you would take into account line pack and all other factors?

A Yes,

Q That would help?

A I would take into account any number of ractors, the length of the line, the design of the stations, the number of units, and so on.

Q Could you tell me this, Mr. Rodebaugh, on that 30-inch line that you were talking about, that is about 1800 miles or so long, isn't it?

A That is about 800 miles long.

Q That is about 800 miles long?

A Yes.

(Go to page 2413)

Q Well, on that particular line would you say it would have been poor practice to have only 5% excess capacity?

A Well, that particular line, of course, was designed to operate at about a 95, from 95 to 100% capacity factor, and that also was very important when you design your line. In other words, if a station goes down and you lose capacity, you also lose revenue. That particular line was designed so that one station could even go down and still - I have forgotten just what per cent of capacity you have got to maintain with one station down.

Q I think you said there was about 14% excess capacity?

A About 14% excess capacity.

Q What I am getting at, would it in your opinion have been bad practice if that had been only 5%?

A In that particular case, yes.

Q You wouldn't like to generalize on that?

A No.

Q Have you thought about long distance transmission lines that have been proposed for export of gas from Alberta, that is, beyond the one that you yourself have worked on?

A No, sir, I have not paid enough attention to the markets to really express an opinion on that.

Q You would not want to express any excess capacity figure?

A No, sir, because I am not sufficiently familiar with it.

Q Thank you very much.

Q MR. MACLEOD: You have only one compressor station on this designed line?

A Yes, that is correct.

CROSS-EXAMINATION BY MR. MILVAIN:

Q I wonder if I might ask one question that occurs to my mind? I notice on this page 15, Mr. Rodebaugh, where you arrive at a price per Mcf delivered at the border, and you may have said this before and if you did I slipped it, did you take into consideration any royalty that would be paid to the Provincial Government?

A No royalty.

Q No royalty figure on that at all?

A No.

Q This is the price of gas delivered at the border. This involves only gathering costs without any royalty paid to the Government?

A That is right, gathering and transportation.

Q I am wondering, Mr. Rodebaugh, too, was a similar calculation of the price of gas delivered at the border made in the Billings, Montana, hearing?

A To the best of my knowledge, no.

Q If there was, you know nothing about it?

A I know nothing about it, no.

THE CHAIRMAN: Thanks, Mr. Rodebaugh.

.....

F. E. WARTERFIELD, recalled, already sworn.

MR. PORTER: It will be recalled when Mr. Warterfield was last on the stand he was requested to revise the part of exhibit 55 which appeared under the title "Gathering System", in order to ascertain whether it would be possible to serve more people in Alberta off that system. That he has

done and we have served a new set of material which is designed to completely replace the material in exhibit 55 under the title "Gathering System". At the same time, in order to have some idea of the number of people and their location along the revised gathering system, Mr. Hu Harries was asked to break down some of the material which he had put together in the exhibit he did with respect to Alberta's needs, and I have here and have served, I hope on everyone, that breakdown. Now, I intend subsequently to call Mr. Harries to prove it but I think it would be useful if it were examined as Mr. Warterfield is giving his testimony, because it shows the density of population and the location of it along the line in detail, and the line and the population figures go together reasonably well if one is to get the picture. So that without proving it I would like to mark Mr. Hu Harries' work for identification, so that it can be examined with the substitute gathering system. This exhibit with respect to the gathering system is called "Gathering System Revision" and it will completely replace the item in exhibit 55 which appears behind the tab called "Gathering System".

GATHERING SYSTEM REVISION PUT IN AND MARKED EXHIBIT 82.

BRIEF OF MR. HU HARRIES PUT IN AND MARKED EXHIBIT 83.

MR. PORTER: Now, we were asked, Mr. Chairman, to file some information with respect to possible taxes in connection with this matter. Mr. Warterfield did not prepare this. As a matter of fact, it was prepared by sending one of our men to the Customs Office where he sat down with the Customs' officer and got out this sheet. I am not sure

quite how we would prove it unless we called the Customs' officer, and gave him a lot of detail, which I do not think we could do. However, it was made up on the basis of showing the worst that could happen to the most stuff, so that we have an outside figure. Now Mr. Warterfield did not make this up but of course he is familiar with all of the material that has gone into it, although he said before and repeats now that he is not an expert on taxes, but he does know the content. So I would like to distribute that for what it is worth, because it is only a statement of the maximum tax that conceivably would be payable, and which we do not concede will be. It is for information, and, if you like, for argument. Here are the figures.

CHART OF TAXES PAYABLE PUT
IN AND MARKED EXHIBIT 84.

Q MR. PORTER: Mr. Warterfield, looking at exhibit 82, I observe that there is no composite map of the revised gathering system?

A That is correct, sir.

Q It is done in Exhibit 82 in sections?

A That is right, sir.

Q But a composite map of it does appear in exhibit 83?

A Yes. I have not that in front of me. The schematic map subsequently duplicates the one that is shown in this exhibit 83, I believe it is.

Q Well, then, the schematic map, that is the one back of the original two pages of text in exhibit 82, will serve as well as the map in exhibit 83?

A Diagrammatically it is the same although it is not to scale

or geographically orientated in exactly the same manner.

Q Now, you might read your text introducing your material?

A GATHERING SYSTEM

The gathering system lies wholly within the Province of Alberta and is designed to serve the fields named on Diagrammatic Sketch S-2 and for which the daily estimated withdrawal rates are shown in parenthesis. It is assumed that gas will be received in a moisture and sulphur free condition and at the stated field pressures. The system can be expanded as may be required to meet a possible future main transmission sales load of 515 MMCFD by extensions to new fields, the addition of booster stations and looped lines in the present system.

Unit contract construction cost estimates are given in Table (1) and additional cost data is given in Table (2) and other supporting statements.

Most of the topography along the presently proposed traverse does not present any unusual or extreme construction problems with the exception of the larger rivers, swamp, muskeg and marsh areas.

Consideration must be given to the construction period and if it should occur during severe cold or wet seasons, the presently predicted costs would be materially increased.

Q And page 2 shows your predicted costs?

A Yes, sir.

Q How does that compare with the one on the proposed line before revision?

A There is a net reduction of $1,168,200.00.

Q Now, this line was designed on the assumption that those fields and people were to be served and that the volumes of gas indicated were available?

A Yes, sir.

Q Do you want to explain the section maps?

A Yes, sir. By reference to Sheet 1 of five sheets, you will observe that the line to the upper right serving the combined fields of Boyle-Mustang-Amisk Lake follow generally along a railroad and highway through the marked, named communities. It is joined by a similar Y-line from Dapp-Jarvie area, which in turn follows a railroad and a highway through the towns as named.

Q At this stage, if I may interrupt, Mr. Chairman, if you will turn to exhibit 83 you will find the population figures given there by reference to the adjacent small centres as explained on page 1 of that section, so that the route of the line and the people available in its vicinity can be made out by comparing the figures in 83 with these sheets in 82?

A In general, the traverse as is now projected follows the original traverse with the exception of such changes as could be made in swinging the line without incurring higher construction costs and still reach the towns and villages to a better advantage. It has, in effect, in its entirety produced what in my opinion is a better basic gathering system than the one originally presented, in that certain fields have come out, others have been introduced and by making those changes, there has been a net reduction in mileage of pipe and some saving in costs, at the same time serving the towns and cities to a better advantage. Do you wish me to go

through each of these maps separately?

Q Well, what I have in mind, Mr. Warterfield, is to put enough evidence on the record about their content that anyone studying them subsequently will have an understanding of what you are attempting to show.

A If you will turn to the section sheet 2 of the five sheets of the map, and from the point of Gadsby-Castor Junction down to Craigmyle there has been a swinging through the Hanna field and on over again to where the line can parallel a highway and a railroad, and pass through the Cessford pool and serve towns which were not originally served in a map numbered the same as this one in exhibit 55. The line is projected to the -- I cannot think of the name of the field -- down to Pincher Creek field and has been altered slightly in the vicinity of Princess to produce a more economical design and at the same time, some slight shifting has been made in the line to move it nearer the towns between Princess and Pincher Creek without adding to the length of the line.

Q That is apparent from sheet 3?

A That is sheet 3 of the five sheets, yes, sir. Sheet 4 of the five sheets showing the line from Castor Junction to Provost is substantially the same as it was originally. That is on sheet 4 of five sheets. There is a slight shifting of the line between Gadsby-Castor Junction and northward towards Donalda and Meeting Creek to bring it nearer to those points including Red Willow. Going to sheet 2 of five sheets, you will note that the line extending into the Medicine Hat field has been laid out, with the same purpose in mind of serving as many towns as exist along the present highway and rail-

road route. I believe that covers the sheets relating to the gathering system, Mr. Porter.

Q Now, if you will take a look at the map attached to exhibit 83, which you have there, which I think you said or I said was like your schematic outline in your first map in exhibit 82, the fact is that the map in exhibit 83 shows the existing utility systems, does it not?

A Yes, sir, it shows the Canadian Western Natural Gas lines and your Northwestern Utilities Limited lines.

Q Now, without Mr. Harries being here, but on the understanding that he will be here to prove these figures to be reliable, I think it might be as well to point out what the purpose was of these reports, and how he went after it, so we will have at one place in the record the evidence about the location of this line and its local significance, and for that purpose I want to read what he says in just one paragraph of it, from page 1 of exhibit 83.

(Go to page 2421.)

F. E. Warterfield,
Dir.Ex. by Mr. Porter.

" "The procedure employed in gaining the statistical material in this report was very simple. We defined the total area of land lying within a ten-mile radius of every point on the proposed gathering system of Trans-Canada and made a personal appraisal of every inhabited community within that belt of territory. The total length of the gathering lines in Alberta is 747 miles. The total area included within a ten-mile radius would therefore be approximately 16,000 square miles.

The following tabulation of the communities not served with natural gas and within about a ten-mile radius of the line details the approximate distance from the gathering line to the community and the present population of the community."

And then he goes on at page 4:-

" The total population of the 105 communities listed in the table is 19,489. This is approximately 10 per cent of the total number of persons outside of the corporate limits of Calgary and Edmonton who presently use gas in Alberta. Without making a detailed engineering survey of each of these places it is impossible to indicate which of them could be served 'economically' but it obvious that the lines of Trans-Canada are a possible gas source for a large number of Alberta residents."

And then he goes into more detail, which he can prove when he comes. I want only to say so much as will make the exhibit useful.

Q Now, I want to say something to you, Mr. Warterfield, about

this matter of natural gas gathering systems,because yesterday awitness was asked about it by Dr. Govier. Where gas has been taken from a field to a main line and the cost seems disproportionate for the quantity of gas that the field can supply, do you, as a matter of practice, calculate that cost on the basis of the stub line, or do you take into consideration the significance of that gas to the stub and main line over-all project in determining whether the stub line to a field is economic?

A It is the general practice to regard your system as a composite.

Q Yes?

A Any one of the components may be, if it is identified and stands on its own feet, non-profitable, but the mere fact that the gas which it handles combines with that of gas from other fields, which can be handled economically, makes it possible to have a composite system which is economic, and without that the gas which is taken from the field of uneconomic length would not have any service.

Q That, of course, results in making it feasible to run branch lines which may serve local people who, otherwise, could not be served?

A That is quite true, and there are many cases to prove that particular point.

Q Now, Mr.Warterfield, I would like you to take this Exhibit 84 into consideration?

A Yes.

Q I realize all the time you did not do it, Mr.Warterfield, but I just want you to be sure of the quantities as they appear there?

A Yes?

Q There is the pipe in the first place, and the exhibit is made up on two bases. One, the value if it were imported from the United States, as explained in Note (1)?

A Yes, sir.

Q The other if it were imported as plate from the United States, in Note (2)?

A Yes, sir.

Q There is no mention in the exhibit of the plate being imported from England?

A In this statement, this "Duty on Plate", is that what you refer to, Mr.Porter?

Q Yes, if imported from Britain the plate is free?

A If imported from Britain the plate is duty free.

Q Now, then, quoting material, and the value of $6,712,000.00, that is duty free, but takes a sales tax?

A Yes, sir.

Q Valves and fittings, regulatory and metering equipment, $1,947,000.00?

A Yes, sir.

Q Must that be bought in the United States?

A I would not think so. I think it is perfectly possible to buy, if not all, then the greater majority of it through Canadian vendors.

Q What about your compressor stations, the next item?

A There is at the present time a very strong feeling on the part of compressor manufacturers, who have representations in Canada, that these compressors can be manufactured to the specifications and horsepower needed for this project.

Q In Canada?

A Yes, in Canada.

Q In view of the size of the order?

A Yes, sir.

Q Now, having examined the content of this, do you say that this is the outside figure?

A The figure as given of $18,000,000.00 in round figures would represent, under the present estimated cost of materials, an outside figure of duty and sales tax.

Q Now, what would you say about the quantity of material that is imported, what would you say about the prospect of it being reduced?

A If we may pass the pipe for a minute, and deal with the coating materials, all of those are available and can be made available through Canadian manufacturers.

Q Yes?

A The valves and fittings, metering and regulatory equipment, a substantial portion, if not all of it, can be made available.

Q Yes?

A The compressor stations and the engines and the auxilliary equipment that goes into those stations has an excellent chance of being manufactured in Canada for this project.

Q Yes?

A The pipe and the plate constituting the largest single item would command the greatest attention, since there are mills in Canada capable of producing the pipe up to 16-inch.

Q Yes?

A It is not unreal, I would say, to imagine this mill expanding its facilities, or other mills being constructed, where plate could be imported from the United States, from England,

or upon an exchange basis, and all of the pipe being made available in Canada. If that were true, then the best picture, so far as tax is concerned, would be sales tax only, and would be represented by approximately $11,000,000.00.

Q Now, your estimate, as given in Exhibit 55, for the over-all completed line, is $253,000,000.00?

A Yes, sir.

Q And you told us, with some care, that you had not made a specific provision for taxes in that estimate?

A No specific provision was made for taxes, identifiable as such.

Q Now, having regard to, or assuming that these figures are correct, and that there may be taxes on this project within the limits of these figures, up or down, what would you say about the estimate of $253,000,000.00?

A I would say that everything being as it should be, that the contingencies and the savings, which we have already seen come about, through a re-design of the gathering system, are adequate to take care of the minimum tax requirements and still leave a contingency available, if needed, to apply upon taxable items not procurable in Canada, and still, at the same time, provide for such minor changes and refinements as any contingency might require to effect a better system.

Q What contingency item have you in the estimate?

A There is a contingency item in the amount of $12,450,000.00.

Q It has always been there?

A Yes, it has always been there.

Q Well, then, what would you say about your estimates on the

other items, and if you have a leeway on that kind of thing in them, or if you have a leeway of that kind in them, are they ceiling figures or maximum figures?

A The figures which are represented in the estimate would represent outside estimate figures. They would be regarded by me as top figures for the construction of the project, and our firm, with all inherent risks, were going to construct a project for that cost.

Q So that even assuming that you have to face a tax bill as high as approximately $11,000,000.00 or $12,000,000.00. you do not, I understand, want to raise your ceiling on that project?

A No, sir.

Q I think that is all.

DR. GOVIER: Mr. Porter, do you think Mr. Warterfield might comment on the tabulations of unit costs that follow Sheet 4?

MR.PORTER: In Exhibit 55?

DR. GOVIER: No, in Exhibit 82?

MR.PORTER: Yes.

DR. GOVIER: I think if he would just highlight them, it would be helpful.

MR.PORTER: Yes.

Q That is Tables 1, 2 and 3?

A That is page 3, unit cost estimate, Table 1?

DR. GOVIER: Yes.

A Those figures which are given there represent a reasonable average of contractors' bid construction cost prices taken from a very wide variety of sources, and in particular, to the 6, 8, 10, 12 and 14-inch pipe, and there was

experience data available for lines of similar size constructed within the Dominion of Canada where the actual contractors' bid costs were made available to me. Those costs were taken and adjusted with respect to the date of their construction to provide for any economic changes such as increase in labour rates, rises in costs of work equipment, tools and materials, and similar items, and, specifically, they represent what, on the average, a line of reasonable length could be constructed for at this particular period.

.....

EXAMINATION BY DR. GOVIER:

Q These figures are exclusive of pipe delivered to the site, is that correct?

A Yes, sir. They do include the loading, hauling and stringing, and the unloading, hauling and stringing, whichever might occur, if it were taken from rail head, or cars, or picked up from stock piles.

Q I see?

A It would include the hauling from that point and stringing along the rights-of-way.

Q What about Table 2, Mr. Warterfield, would you comment on that, please?

A Table 2, by sizes of pipe, tabulates the miles of pipe in the revised gathering system, which you will now note is 738.6 miles as against the original figure of 747 miles. The total tonnage has been calculated on the basis of the weight, as given, of pounds per foot of the pipe proposed to be used.

Q Yes?

A The coating materials, including the freight,have been estimated for 100% coating application to each of the line sizes, and the contract construction, regular, is supported by Table 1, and the special construction is determined by an analysis of the location in which the particular size and length of the line is laid, with respect to the rivers, crossings, highways, railroads, and any other features where special construction over and above contract normal construction might be required.

Q Do you have any figures, Mr. Warterfield, which could be compared with the figures that Mr. Rodebaugh just gave us on the cost of pipe, freight prepaid,in a comparable area? I notice you have figures for freight around Princess and so on?

A Yes.

Q Could you reduce some of those to a comparable value for us?

A The freight given in dollars per ton.

Q What I mean to say, could you say that for a 12-inch pipe in the general Princess area, could you give us your equivalent figure for freight prepaid pipe?

A I do not have it prepared in that form, but the estimate for pipe is based on $125.00 per ton f.o.b. mill, and the freight is then added because of the destinations where this pipe may go are variable, and those things have been taken into account.

Q Yes?

A And Table 3 is prepared to show what would be a reasonable construction program for shipping quantities of pipe, as indicated, to those destinations, and the freight rate

applicable to that point has been applied to the total tonnage transported. I have no comparable figure in the same manner in which the previous witness gave his figures.

Q Well, would you say that it would be calculated this way, that you would take $125.00 plus $46.00 some odd, plus duty, if applicable, plus tax?

A Yes.

Q And you would get your comparable figure?

A Yes.

Q Fine.

.....

RE-EXAMINATION BY MR.PORTER:

Q Perhaps I should ask you, Mr. Warterfield, is the extension to the Whitelaw-North Tangent Area, has that been changed from the previous exhibit, Exhibit 55?

A Yes, sir, it has.

Q Perhaps you should deal with that?

A The change is best observed by turning to Sheet 5 of the five sheets, and beginning with the dotted line, the intersection of the dotted line with the solid line at the Town of Jarvie, the original line was slightly to the left of where it is at the present time, for some 6 or 8 miles. The balance of the line to a point near McLennan, is exactly the same as in the original exhibit. The greatest change occurs in the re-routing of a line from the Peace River field at the north point of the map, to the west through Falher and North Tangent into the Whitelaw field. It was a coincidence that the length of that change was such that there was no substantial difference

in the two routes, and the total length of the entire line remained unchanged from the original exhibit.

Q Yes?

A And it is for that reason, I might add, that the cost estimates and the volume of gas that they will transport have also remained unchanged. There is one difference - that total has remained unchanged, with the only difference being that two rivers were crossed, which required additional special construction over and above that of the original estimate, and the contingency prepared and provided for just such things was reduced by the amount necessary to take care of that special construction.

THE CHAIRMAN: I think we might adjourn for a few minutes.

(Hearing resumed after short adjournment)

CROSS-EXAMINATION BY MR. NOLAN:

MR. NOLAN: I was going to ask Mr. Warterfield a question but perhaps I had better wait until my brethren gather.

Q Mr.Warterfield, am I right in saying that your proposed gathering system intends to take gas from the fields in the vicinity of Edmonton?

A In the vicinity of Edmonton?

Q Edmonton?

A It would be very difficult for me to answer that question directly.

Q Why?

A For this reason, that the assignment is one of designing a gathering system to serve such fields as are designated by the geologists that have been employed for that purpose.

Q Well, are some of those fields to be served in the vicinity of Edmonton?

A The closest field in the vicinity of Edmonton, I believe, would be Acheson. Is that the way you pronounce it?

Q Yes. And are there any others?

MR. PORTER: Sheet 1 of 5, is it?

A Yes, sir.

MR. PORTER: Perhaps I should say to my friend that there will be evidence led by Mr. Trostel supported by an exhibit not yet filed but which my learned friend has received, volume 5.

MR. NOLAN: Which goes into it?

MR. PORTER: Which will show not only the fields but the volumes and rate of take from each

of those fields served by this line.

MR. NOLAN: Thanks, Mr. Porter.

Q There is just one other point I was interested in in your discussion with my learned friend, Mr. Porter, about the materials that might be manufactured in Canada. You remember your discussion with him?

A Yes.

Q You remember you mentioned, I think, the valves and fittings and the regulating and metering equipment, compressor stations in their entirety? I appreciate that if they are manufactured in Canada questions of duty do not arise?

A It would not apply, as I understand it.

Q But the duty or the tariff that is there now is for the protection of the Canadian manufacturers, isn't it?

A I do not understand the question.

Q I say, the purpose of having a tariff wall and charging duty is for the protection of the Canadian manufacturers?

A Well, I am not a tariff expert, sir, but if your statement is true I will agree with it.

Q Well, perhaps if I put it to you this way you will also be able to agree with me, that you could not expect to get these materials manufactured in Canada at the same price at which they could be obtained in the United States?

A That would be something that would have to be at the level of the manufacturers, I think, but if I may draw upon what I have been told as being true it is quite possible not only to equal the prices of manufacturers in the States but in some cases to better them.

Q Well, I suggest to you the price you pay in Canada would

be the duty value?

A I am not prepared to say that it would be or would not be.

Q All right.

MR. PORTER: This is the Liberal policy of tariff for revenue, Mr. Nolan.

CROSS-EXAMINATION BY MR. MARTLAND:

Q Mr. Warterfield, with reference to your freight cost, would you just tell me from what point those freight costs were computed?

A They were taken as a common point at the Soo.

Q Now, your estimated cost of the pipe at $125.00, that is on the basis of an American price, I take it, was it?

A That is based upon current going American prices.

Q So that if we are to use that estimate we should properly then include duty and the sales taxes?

A If you use the estimate of pipe, yes, sir.

Q And that is what you have used, is it not?

A The one given in this table, this value represents that.

Q Is that a quotation that you have received, Mr. Warterfield?

A Not a firm quotation, no, sir.

Q It is not a firm quotation?

A The $125.00 figure, is that the one you speak of?

Q Yes. It is not a firm quotation?

A No, sir.

Q Now, I notice that in your Exhibit 82, in the earlier exhibit filed, you have been careful to indicate that there may be a material increase in your prediction costs in the event that the construction periods should occur

during severe cold or wet seasons?

A I think it is fairly well known and understood that when construction proceeds in adverse weather that your progress is not as great as it is in good weather and your costs correspondingly increase.

Q Yes, admittedly so. And you have been careful to say that your estimate would have to be materially increased in those eventualities?

A One other thing would have to occur also, it would be necessary for the owner to direct the contractor to work during those bad seasons if he had prepared his bid based upon normal weather conditions.

Q And I think you told me the last time that the same statement would properly apply to the whole of the big ransmission line?

A It could.

Q As to the gathering system.

CROSS-EXAMINATION BY MR. MILVAIN:

MR. MILVAIN: If I might ask Mr. Warterfield one or two questions.

Q I am looking, Mr. Warterfield, at Exhibit 82 and attached to it there is a schematic diagram or a diagrammatic sketch. I take it this was prepared by yourself. Drawn by J.F.W. Is that yourself?

A No.

Q Is that somebody else?

A Someone else.

Q But did you have anything to do with preparing this, Mr. Warterfield?

A It was prepared under my direction.

Q And it shows a number of different fields. For instance, in the upper right hand corner there is Boyle, Mustang, Amisk Lake, and then in brackets the figure "12".

A Yes, sir.

Q I take it from your text that means the daily withdrawal will be 12 million?

A 12 million feet per day.

Q And so with all the other fields that are shown on this diagram?

A Yes, sir.

Q Is that daily or peak?

A That is represented as a daily average.

Q Daily average withdrawal. Now, I take it, then, that the plan your company had in mind is to withdraw from all of those fields the amount that is shown in brackets?

A That is the amount that was furnished me by the geologists as a rateable take from those fields.

Q Was it said that is the amount that was contemplated would be taken or just the amount that could be taken?

A That is the amount that could be taken and is the basis for the design of the line to serve that field for that quantity.

Q And then was the line so designed that not only could the field produce that amount but that the line could carry that amount?

A Yes, sir.

Q Can you tell us whether or not the whole scheme of the Trans-Canada Pipe Line was such that it would require to

withdraw from these fields the amount that is shown on the diagram?

A It could come from those fields or fields could shift, increase or decrease for the total requirement.

Q But that in order to make the general scheme of the Trans-Canada Pipe Lines feasible it would be necessary to withdraw the amounts from the fields shown on the plan?

A Which in the aggregate would total the main transmission system.

Q In other words, you need that amount of gas in order to serve your scheme?

A From some place.

Q Now, there is one other thing I wanted to ask you, Mr. Warterfield. I notice on looking at Exhibit 83, at pages 2 and 3 and at the top of 4, it gives the names of the communities and the miles they are from the pipeline and the population. There would be a great many of these areas it would not be economic to run a line to, isn't that the case?

A I wouldn't say so, that it would be uneconomic. It depends entirely on how much the people want the gas.

Q I was just thinking, Mr. Warterfield, for instance, on page 2 you show a place called Villeneuve 9 miles from the line and there are 20 people. Do you think it would pay to run a 9-mile line to serve those 20 people?

A It depends altogether, I think, sir, upon your definition of economics.

Q Well, I say, would it be commercially feasible?

A If the consumer desired to pay the cost of that facility

and wanted it bad enough, it would be economic to him.

Q That is right. If he wanted to pay a high enough price, but can you imagine anybody paying the price that would be required?

A I can imagine me paying it if I was out there and cold and felt that I could.

Q You might buy a little coal cheaper than that, don't you think? Don't you think you could, or perhaps chop some wood?

MR. PORTER: I would buy a little coal not any cheaper.

Q MR. MILVAIN: But the fact is, one would not anticipate serving a great many of the communities that are shown on those pages?

A These communities can be served.

Q That is right, they could be theoretically served but in all practicality they would not likely be served?

A That is something I would not like to guess upon.

CROSS-EXAMINATION BY MR. McDONALD:

Q Mr. Warterfield, from your experience as a contractor, you are going out to buy, say, 6500 tons of steel as compared to 650,000 tons of steel, you would figure on getting a better price for your large order, wouldn't you?

A If it was placed with one vendor and he had the mill capacity, I would think that would naturally follow.

Q And you had a long time to negotiate your price, if you were not working against a deadline of, say, six or

seven months from the date you placed your order?

A All of the factors naturally would enter into your negotiations.

EXAMINATION BY DR. GOVIER:

Q Mr. Warterfield, in answer to Mr. Milvain I think you said that the figure 12 in brackets on the schematic diagram referred to the average day?

A That is my understanding of the figure, that is an average rate of withdrawal.

Q Was that not the figure on which you based the sizing of the line?

A I beg your pardon, sir?

Q Was that not the figure on which you based the sizing of the line?

A Not entirely. The line was over-size but provided for what might be in the neighbourhood of 80 or 85 per cent peak figure, of that average.

Q I see. So that we should interpret the figure 12 opposite Amisk Lake as being the daily average during a period when the entire system is operating at its lower capacity, before it comes up to the 515 figure, is that right?

A Yes.

Q In designing the line you have used that figure in conjunction with an appropriate load factor?

A Taking it into account where it was felt it should. For example, in the lower ends of the field where the larger sized lines are involved that rate factor was applied in that instance in order to avoid going back in and looping

at some future date with a line of smaller size where it was at this time as economical as not from the standpoint of investment to put in a 22-inch line as against a 20 that might be theoretically required.

Q I see. Would you check me on a little arithmetic I did, Mr. Warterfield, if I could find it here. I was attempting to work out on the basis of your figures in Exhibits 83 and 84 the cost of pipe per ton inclusive of freight and sales tax, and I took $125.00 and then I assumed that the line size would be greater than 10½-inch and I took 15 per cent duty and then I cut that in half, assuming that that is what this 50 per cent drawback means?

A Yes, sir.

Q Which in effect is 7½?

A Yes.

Q By adding that to the $125.00, then I took 10 per cent sales tax and my total came to $149.00, and then I added the $46.00 freight.

A Yes, sir.

Q Would that be right?

A That is approximately correct.

Q That gives $195.00 a ton, and on the basis of your freight figures, apparently that would be a fair enough figure anywhere in the Province.

A It should average approximately that.

Q I take it, then, that the difference between that figure and the figure that Montana Power Company gave us earlier for cost of pipe is due to the point Mr. McDonald raised, that is, the volume of the order. And would there be any

other factors involved?

A Could be. I do not say that they exist but I say certainly they could be and that is the demand which was placed upon that pipe at the time. If you wanted to have it at a certain specified time it would require a premium operation. That could conceivably attach to it.

Q Do you think those factors would be sufficient to explain the difference in $195.00 and the $220.00 odd, $230.00?

A The time at which negotiations are entered into, the supply and demand, and mill capacity, often affect the quotation which a person will receive.

Q Would it affect it that much, that is what I am asking?

A Well, I could not answer truly on that point but it does seem a little high to me.

Q Thank you.

CROSS-EXAMINATION BY MR. STEER:

MR. STEER: I wonder if I may ask just one or two questions on this only for the purpose that we won't fall between two stools.

Q Mr. Waterfield, you are not in a position to give me any information as to the plan that Trans-Canada Pipe Lines has for the serving of gas to the local distributing systems, that is, Northwestern and Canadian Western?

A I do not believe that I can.

Q And all you have shown here so far as your evidence goes is the fact that your proposed main line crosses the 16-inch line from Bow Island and crosses the Red Deer?

A Yes, sir.

Q Have you made any investigation of the capacity either of the Bow Island line or of the Red Deer line?

A I have not, sir.

EXAMINATION BY MR. C.E. SMITH:

Q Mr. Warterfield, if I understand this situation correctly, your new designed gathering system is roughly 9 miles shorter than the old one?

A Yes.

Q And its estimated cost is $1,200,000.00, something over $1,000,000.00 less than the old one?

A Yes.

Q And it gives at least a possibility of serving many, many more communities than the old one, is that right?

A Yes.

Q Well, why didn't we get this one first, Mr. Warterfield?

A Because the fields which were served in the first instance are different from those which are served there and since certain fields have been cut out and eliminated the line serving those fields have also been eliminated.

Q Well, Bashaw is cut out, and Dunmore is added. What else is there to it?

A Quite a few of them have been cut out and there has been a re-routing of the line in certain instances to accomplish the purposes that the Commission asks.

Q Does this follow, that because the Board suggested you let us have something to show how you would serve towns?

A I think it would have occurred anyway.

Q In the course of time?

A In the course of your analysis of the system.

Q Now, we have a shorter line at less price and we have an opportunity of serving more Alberta communities. That is why I wondered if it only came as a result of the suggestion of the Board. Is there anything else you could add to that?

A I would be looking for a further improvement of that system before the pipe actually goes into the ground, and even more communities being served, and I would certainly hope that the cost would be reduced and the facilities improved in its capacity to carry gas.

Q Even further?

A Even further.

Q I see. And I take it that you would have in mind the service of Alberta communities when you designed your first one, or didn't you?

A Not primarily. Primarily it was to get a basic system and the cost of it could be determined.

Q So that was probably brought to your attention a bit forcibly by the suggestion of the Board, is that a fair way to put it?

A It was brought more forcibly to my attention.

Q Just one other question. It has been pretty well dealt with. Having regard to Mr. Harries' submission which he will make, Exhibit 83, and his list of communities here, would you take his list of communities and try to figure out in any way whether or not the Trans-Canada, you people, I will put it that way, whether they might be interested in servicing these communities as a distributing company,

or was it the intention that some distributing company would be formed and buy gas out of the pipeline?

A It is my understanding from comments that have been made that they do not intend to be a distributor.

Q Why I asked that is, it seems to me that unless they do so it would be awful costly gas to a lot of these communities, such as Mr. Milvain mentioned, and there are many more, as you know.

MR. PORTER: At what point do you become a distributor, that is the answer to it?

Q MR. C.E. SMITH: This place 7 miles away with 10 people in it of Mr. Milvain's, that is good enough to my mind. It would seem if you served each one of those 10 people it would cost them the price of about half a mile of pipeline to get gas into their cook stoves unless you people wanted to do this over-all cost business that I think Mr. Porter mentioned.

A Well, it is entirely possible, it would seem to me, if some person who wished to get into the gas distribution business to form the necessary company and capital and build these systems, as has been done numerous times along gas transmission lines.

Q As far as you know, it is not anticipated that Mr. Porter's company itself would be a distributing company or have a distribution system to any of these communities?

A As far as I know, it is not the intention to go into distributing or marketing directly to a customer as a household unit.

Q When you were referring to over-all cost I thought he was

talking about cost to the consumer.

A It is the gathering.

MR. PORTER: It was gathering I was talking about.

Q MR. C.E. SMITH: I was probably in error then. And the addition of the line at Dunmore, is that simply information you got from your geologists?

A Yes, sir.

Q That is an illustration of what you mentioned a moment ago, is it?

A Yes, sir.

Q That would be because, I take it, one or two others have been cut out on your new scheme, such as Bashaw?

A Bashaw has been cut out.

Q And you say there are other similar situations that appear from the maps themselves, is that correct?

A Yes.

CROSS-EXAMINATION BY MR. MARTLAND:

Q Just one more question with reference to the computation that you were discussing with Dr. Govier. As a matter of information to me, Mr. Warterfield, is it correct that you add on the 15 per cent duty to the value and that the 10 per cent sales tax is then computed and that value plus the 15 per cent and the drawback comes later?

A That is my understanding, that the drawback occurs after the pipe is buried.

Q So that the sales tax would be considered on the value plus the 15 per cent?

A. That is my understanding of it, sir. And you make your application for your refund just like you do for your withholding taxes.

MR. C.E. SMITH: As a matter of record, Dr. Govier, when you said Exhibits 83 and 84, did you not mean 82 and 84?

DR. GOVIER: Yes, I did, Mr. Smith.

THE CHAIRMAN: Thanks, Mr. Warterfield.

(Go to page 2446)

MR. PORTER: I will call Mr. Shattuck. It will be recalled that Mr. Shattuck was asked to furnish certain fuel prices. Well, I have here, in large numbers, a variety of them. I think perhaps the best way to distribute them will be to pass them out as Mr. Shattuck identifies them.

THE CHAIRMAN: Yes.

.....

J. G. SHATTUCK, recalled, already sworn, examined by Mr. Porter, testified as follows:

Q Now, Mr. Shattuck, you were qualified earlier and you are still under oath?

A Yes.

Q Now, we are going to file some exhibits in answer to the Board's request to supply some material about prices, and I think I have them in the right order as they appear in your book. Now, if you will just tell us what they are, I will put them in, and we will then distribute them.

A These are nine sets of information which represent the major portion of the unit prices for fuel which we have obtained independent of the information from the industrial users themselves in the nature of quotations, which we have used as guide data in preparing our market studies.

Q Yes?

A The first one of these is "Industrial Fuel Prices in Nine Ontario Cities" and this was obtained in August of 1950.

Q Yes?

A This information was obtained before I went to work on the project, but since I have been working on it, the man who got this information has worked under me, under my supervision,

and I have discussed the matter with him.

MR. PORTER: Now, Mr. Chairman, I do not know whether you wish that they should be put in as one exhibit, or whether there will be some confusion if that is done. There are nine sets of them.

THE CHAIRMAN: Nine different sets?

MR. PORTER: Yes, nine different sets which deal with a different locality and some of them deal with different commodities.

THE CHAIRMAN: I think you had better put them in separately. The first one will be marked exhibit number 85.

MR. PORTER: Exhibit 85?

THE CHAIRMAN: Yes.

STUDY RE INDUSTRIAL FUEL PRICES IN NINE ONTARIO CITIES, AUGUST, 1950, SUBMITTED ON BEHALF OF CANADIAN DELHI MARKED EXHIBIT 85.

Q MR. PORTER: Now, would you like to tell us what exhibit 85 is about, Mr. Shattuck?

A This presents the range of fuel prices ordinarily obtained as quotations by industrial users of average and large size in some nine Ontario cities.

Q Yes?

A There are several grades of coal represented here, nut slack, slack, prepared stoker, and mine run. There is also coke, foundry and stove grades, domestic fuel oil, which is fuel oil number 2, and bunker "C", which represents in, I believe, most cases, a combination of grades 5 and 6.

Q Yes?

A The unit costs by the ton and by the gallon have been converted to a unit basis of per million BTU, using average value for

the heat content of the various factors. These average values are noted at the end of the second page of exhibit 85. Now,

Q this information is as of August, 1950?

A Yes, sir.

Q And it was obtained by a personal inquiry?

A It was obtained by personal inquiry, yes, sir.

Q From users and suppliers?

A It was obtained in this case both from users and suppliers.

Q Now, I have in my hand a document entitled, "Range of Fuel Prices in Proposed Territory", obtained in Industrial Fuel Survey January and February, 1951, beginning with the heading, "Eastern Bituminous Coal." Will you tell us about that, Mr. Shattuck, how it was obtained?

A These are the range of fuel prices given in answer to inquiry both by correspondence and personal interview of the users of industrial fuels, which our field crew contacted in preparing the basis of the market estimates which I have submitted here. This covers for each principal geographical division, such as cities, and in some cases metropolitan areas, the fuels by general classes, such as eastern bituminous coal, which is practically synonymous with United States coal, western bituminous coals, which includes the several kinds of coal produced in the Prairie Provinces, one entry of a commercial mixture of bituminous coal and lignite, the so-called "Forestburg" coal, which is strip-mined here in Alberta; lignite, which is produced for the most part in Saskatchewan; anthracite coal, which, I understand, is almost entirely, if not entirely, imported from the United States, coke from the nearest supplier, heavy oil and light oil. The heavy oil here means grades 5 and 6 and

the light oil means grades 2 and 3.

MR. PORTER: That will be exhibit 86, sir?

THE CHAIRMAN: Exhibit 86.

SUBMISSION BY CANADIAN DELHI RE RANGE OF FUEL PRICES IN PROPOSED TERRITORY, JANUARY AND FEBRUARY, 1951, MARKED EXHIBIT 86.

Q MR. PORTER: All right, Mr. Shattuck?

A This exhibit, as I understood the Board's request, is the information that they were inquiring about when I was last on the stand.

Q Well, all of these exhibits, Mr. Shattuck . . .

A All of these exhibits are the ones that we used in our guidance.

Q Which are being produced for the information of the Board, as requested?

A Yes, sir.

Q Now, I have another group which will be, I assume, exhibit 87?

THE CHAIRMAN: Exhibit 87.

MR. PORTER: These are entitled "Fuel Prices in Toronto and Seven Other Ontario Cities, July, 1951".

SUBMISSION RE FUEL PRICES IN TORONTO AND SEVEN OTHER ONTARIO CITIES, JULY, 1951, MARKED EXHIBIT 87.

Q MR. PORTER: Now, this exhibit 87, Mr. Shattuck, covers the same territory on a different date?

A Yes. Exhibit 87 covers approximately the same territory as exhibit 85, but about one year later.

Q About one year later?

A Yes.

Q And it is set up on the same basis?

A Yes, it is.

MR. PORTER: Now, I have another exhibit which, I take it, will be exhibit 88.

THE CHAIRMAN: Exhibit 88.

MR. PORTER: Or should be exhibit 88.

THE CHAIRMAN: Yes.

SUBMISSION "INDUSTRIAL FUEL PRICES AT WINNIPEG, CARLOAD LOTS, F.O.B. PLANT, JANUARY, 1951, MARKED EXHIBIT 88.

MR. PORTER: That is entitled "Industrial Fuel Prices at Winnipeg, Carload Lots, F.O.B. Plant, January, 1951."

A I think that is practically self-explanatory. It is the price being paid by industrials at approximately January, 1951, for the indicated fuels.

Q Yes?

A Their per million BTU conversions were based upon references with regard to the suppliers as to the content, the heat content of the various fuels.

MR. PORTER: Are you ready for exhibit 89, Mr. Chairman?

THE CHAIRMAN: Yes.

MR. PORTER: This is entitled "Industrial Fuel Prices at Winnipeg, November, 1951."

THE CHAIRMAN: That will be exhibit 89.

SUBMISSION RE INDUSTRIAL FUEL PRICES AT WINNIPEG, NOVEMBER, 1951, MARKED EXHIBIT 89.

MR. PORTER: That is under the heading of "Souris Lignite", "Alberta Bituminous","Alberta Strip", and "Fuel Oil". Those are the sub-headings. That will be exhibit 89?

THE CHAIRMAN: Yes.

A Exhibit 89 covers the same subject as exhibit 88 at a later date, 1951.

MR. PORTER: Are we ready for exhibit 90?

THE CHAIRMAN: Yes.

MR. PORTER: Exhhibit 90 is entitled "Domestic Fuel Prices, November, 1951", and at the upper left-hand corner there is the word "Montreal" and below it the word "Anthracite".

SUBMISSION RE DOMESTIC FUEL PRICES, NOVEMBER, 1951, MARKED EXHIBIT 90.

Q MR. PORTER: Will you tell us about this, Mr. Shattuck?

A This three page exhibit shows the prices quoted by suppliers in November, 1951, for fuel delivered at the store or home in the City of Montreal on the first page, Toronto on the second page, and Ottawa on the third page.

MR. PORTER: The next document will be exhibit 91?

THE CHAIRMAN: Exhibit 91.

MR. PORTER: This is entitled "Domestic Fuel prices, November, 1951" at Winnipeg.

Q And this deals with Winnipeg, Mr. Shattuck?

A It does.

SUBMISSION RE DOMESTIC FUEL PRICES, NOVEMBER, 1951, MARKED EXHIBIT 91.

MR. PORTER: The next is exhibit 92?

THE CHAIRMAN: Yes, exhibit 92.

MR. PORTER: This is entitled "Retail Fuel Indexes", obtained from Dominion Bureau of Statistics.

SUBMISSION RE RETAIL FUEL INDEXES MARKED EXHIBIT 92.

MR. PORTER: And finally as exhibit 93, a document entitled "Retail Fuel Prices for Specified Cities", October 1st, 1951.

THE CHAIRMAN: Exhibit number 93.

SUBMISSION RE RETAIL FUEL PRICES FOR SPECIFIED CITIES, OCTOBER 1, 1951, MARKED EXHIBIT 93.

MR. PORTER: That is obtained from the Dominion Bureau of Statistics.

DR. GOVIER: I thought you were going to reach number 100.

MR. PORTER: I may make it yet.

MR. C. E. SMITH: There should be a celebration when we hit that number.

MR. PORTER: I am all in favour of that. I think I have got four to go for it, too.

Q Now, Mr. Shattuck, these are the figures on which you relied from time to time and place to place in arriving at your figures?

A Yes, they are.

Q Yes?

A I relied upon one other factor in fuel prices which I have not been able to reduce through confirmation by quotations, and that is that since the survey date has been obtained, as shown in exhibit 86, there have been freight rate increases, and mine labour increases, and I have relied upon those as well.

Q The effect of those to be increase or firm up?

A To increase the cost of the coals and to produce more incentive for prospective customers to buy natural gas instead of coal.

Q Now, unless there is something that I should go into on direct testimony, I believe that completes my job, because, as I recall it, Mr. Shattuck was under cross-examination at the time this request was made. Answer all reasonable questions from my learned friends, Mr. Shattuck.

A Yes, sir.

EXAMINATION BY DR. GOVIER:

Q Mr. Shattuck, before we get off on another subject, I wonder if you could tell me if these prices included any relative combustion efficiency factors?

A No, they do not. The conversion was made somewhat as you suggested, by an average factor in applying it. It was not done on a slide rule, it was done on a calculator.

Q I see. Could you tell me, Mr. Shattuck, in your use of these figures, or their equivalent, you, yourself, would have used no factor for relative combustion efficiency?

A I did use one additional factor, which I am glad you reminded me of. I allowed 25 cents a ton, which I treat as a very low figure for the handling of the coal from the point of receipt at the prices to the boiler room or fire box, and for the removal of the ashes. Such costs can in a small plant approach $1.00, but I have used uniformly in my treatment of it at 25 cents.

Q Yes.

A I should point out, however, that I arrived at my market figures individually, plant by plant, and so I could not say that I applied a uniform set of data to each one of them, because as the data concerning each plant was made available

to me, I treated it upon everything I knew about that particular plant.

Q I see. I suppose it would be fair, though, for us to assume that in those individual considerations you did take into account such matters as combustion efficiency, convenience and so on, did you, as well as this ash and coal handling item?

A Yes, I did, on the larger plants. I would say that on some 20 plants that that was material.

Q Thank you.

EXAMINATION BY THE CHAIRMAN:

Q Mr. Shattuck, before we go on with this, is the price per BTU figured by comparing the cost to the per ton as well as by the BTU value?

A Yes.

Q There is no allowance in this cost with regard to the BTU's for efficiency?

A There is no allowance made here. This, I believe, to be characterized as a delivered price per million BTU of the fuel.

THE CHAIRMAH: Anyone wish to question Mr. Shattuck?

MR. MARTLAND: I have some questions.

CROSS-EXAMINATION BY MR. MARTLAND:

Q Mr. Shattuck, just to refer you very briefly to what we had covered the last time you were in the witness box, I understood from you that on your approaches to industrial consumers in your market that prices for the gas were not discussed?

A That is right.

Q And the basis of the discussion was merely to ascertain

willingness or otherwise, to convert if gas could be obtained on a competitive basis, at a competitive price?

A I think you have overemphasized an incidental question. We made our study, we made the interviews and directed the correspondence to finding out two principal facts. They were, how much fuel is used and what price is paid for it. We asked additional information concerning the rate at which it was used, the circumstances under which it was used, the end product, and then as a sort of a parting gesture, asked them would they use it, and gave no weight to what they said, yes or no.

Q So that no weight was given to that answer in fixing these amounts in your market estimate?

A That is right.

Q How would you decide, then, whether or not any particular industry should properly be included then within your market estimates?

A Whether or not the gas was suitable, and whether or not the price at which it would be offered would be such that they could not afford to turn it down.

Q And did you know in your own mind what price would be?

A Pretty well, yes.

Q Well, would you tell me?

A Well, it was different for each plant.

Q Well, can you give me some range as to what you had in your mind as to the price for the industrial gas to be sold?

A I might give you an example, I believe, that would answer that question.

Q Yes?

A If a plant was buying United States bituminous coal, for example, having an average of 27 million BTU per ton for $10.00 a ton, I would say that they would be willing to buy that on an equivalent basis and pay for natural gas at about $10.25 a ton.

Q Well, did you have any price in your own mind in reaching these decisions, prices for the natural gas to be supplied to these industries?

A For each individual plant I did so.

Q Well, can you tell me what the ranges were, the average price per thousand cubic feet?

A No, I could not tell you that from memory, that would be a job of compilation just like these, and giving an allowance of approximately 25 cents a ton for handling coal and no allowance for handling oil.

Q But you cannot give me now any idea as to what those average prices per Mcf would be when you made your decision as to whether an industrial unit, or an industry, should be included in your market estimate or not?

A I think I have answered you very exactly. May I illustrate that again, please?

Q Yes?

A In Exhibit 86 of the Range of Coal estimated by the particular customer. For instance, on page 1 the 25 cents a ton handled is approximately 1 cent per million BTU, so that if the range for the fuel was found to be available and being used in Montreal from 35 cents to 70 cents, then I would assume that in most locations and plants it would be 36 to 71 cents, depending on which plant it was, whether it was a high or low.

Q Do you assume that you would be selling gas in Montreal at 36 cents?

A No, I do not. That was the low range, the low end of the range.

Q And do I understand that you were considering a different price per Mcf for each individual industry?

A No, sir. I think it would vary for industries, but not a different one for each industry.

Q Now, you used a form letter to communicate with a number of them. Have you got a copy of that form letter?

A No, I do not believe I have. I think I remember largely what was in it, but I would hate to try to duplicate it from memory.

Q I see. Now, in your figures you have a considerable proportion of industrial interruptible, Mr. Shattuck, in your market estimate?

A Yes.

Q A good part of those would be large consumers, would they not?

A Yes, that is right.

Q What kinds of industries?

A I do not know if I could name all the different kinds from memory. They go through quite a range of primary manufacturing processes through some assembly plants.

Q Some of them would be very large consumers?

A Yes, some of them are.

Q And in those cases the matter of conversion costs would be quite a serious item?

A Well, it would be a large sum of money. It would be a less serious item probably for the large plant than it would for the small one.

Q You mean, in proportion?

A Yes.

Q Could you give us any idea as to what those conversion costs might run to in the case of some of the larger plants that you were proposing to serve?

A I did not obtain figures specifically for that purpose here. I do not believe I should make guesses on that point.

Q You do not want to hazard one?

A No. It is a very small amount per Mcf.

Q MR. PORTER: A very small amount per Mcf?

A Per Mcf sold.

Q MR. MARTLAND: I was thinking in hundreds of dollars for conversion. You do not think you can get those for me?

A No.

Q Were you thinking in terms of long-term contracts for these industrial users when you made your market estimates?

A I did not decide that point. I believe that is still open.

Q So that I can say that that fact was not in your mind when you made your conclusions in arriving at your market estimates?

A No, I did not treat it as a long-term-contract proposition.

Q And an industry which was faced with a substantial conversion cost would be anxious, would it not, to have a long-term arrangement?

A I think when you get to that point, we had better decide what long term means. Should I take an example?

Q I would be glad if you would.

A Some plants in the Unites States ask for terms as long as 5 years to cover that. Many of them are satisfied with 3, and a considerable number will take gas on a 1-year contract. I

think it depends upon the installation at the plant, and the necessary work to be done to convert it.

Q Looking at it from the other point of view, it would be quite important to the transmission company to have long-term contracts, would it not, in view of the very large proportion of industrial load?

A It might look better on paper, that is, to have long-term contracts, but I believe it is about the same thing, the incentive which leads to the user converting to natural gas will probably keep him using it.

Q Now, you have given us a good deal of material here today, Mr. Shattuck, which, of course, we have had no opportunity, as yet, to look at, but I ask you this, that in deciding whether or not a customer would convert from another fuel to natural gas, an industrial user, he would bear in mind not only the prices of those other fuels now, or one year back, but he would be looking back over a period of years, wouldn't he?

A I think rather he should be looking forward over a period of a few years, is that what you mean by your question?

Q No, it is not. What I have in mind is, that he knows what he was paying for coal, for fuel oil and so on, over a period of some years back, and in considering the position as to conversion it is not going to be based solely on relative prices now?

A No, it would not be based entirely upon current prices, but I do not believe the historical prices would have as much weight as the probable future prices.

Q Would they have some bearing?

A Very little.

Q Yes?

A Of course, if you bought a fuel very cheaply in the past, and you could find a reason for supposing it would reach that level again, you would not take that into account. I do not know of such reasons here.

Q The industries might recall certain fluctuations in the prices of the fuel in the past?

A Yes. If there were cycles that you could identify and depend on he should take those into account.

Q If he had a reasonable hope of reduction from present-day prices, then he would be taking that into account in deciding whether or not a conversion would be made?

A I am sure he would.

Q Yes. Now, you are dealing, I suppose, with the exhibit that was prepared by Mr. Ransom for H. K. Ferguson & Company, exhibit 55?

A Yes.

Q By the way, was that exhibit prepared before you made your market estimates, or when did you have the advantage of Mr. Ransom's work?

A Mr. Ransom's work was prepared under my supervision, and we have been discussing it since we undertook the job in last December. These particular figures, as I remember, were prepared, I think, a month or two ago.

Q I see. I mean, did you have those figures for transportation costs in mind when you were making your market estimates?

A Even before Mr. Ransom began his work we had in mind, when H.K. Ferguson first undertook the job, we had preliminary

figures that were submitted by the applicant here, as to what they thought the costs would be, and they were approximately right, so that we did have a guidance as to costs all the way through.

Q Now, Mr. Shattuck . . .

A I would like to make one more point, if I may.

Q Yes?

A Before I arrived at the quantity of gas which I estimated could be sold in these markets, I had to have a very definite idea of the range of prices which would be obtained, and whether or not that was above or below cost.

(Go to page 2462.)

Q The result of Mr. Ranson's survey there is total transportation cost of 38.62 cents per Mcf.?

A That is right.

Q And I think on cross-examination he admitted that if the cost of the line was larger than the one that he had assumed for purposes of his rate base then there would have to be corresponding proportionate increases in his figure. You agree with that?

A That is right.

Q And to that transportation cost there would have to be added the price of the gas purchased?

A That is right.

Q And will you assume that it will probably be in the range of 10¾ cents per 1,000 or higher?

A Well, that is not my opinion, but if you wish to use it.

Q I see. You have a different opinion, have you?

A Yes, I have.

Q Well, if it were 10¾ cents, then purely as a matter of arithmetic you have a figure which is almost 50 cents per 1,000 cubic feet?

A It is.

Q Now, on top of that, I take it that there would be some mark-up by the distribution companies receiving their gas from this transmission line?

A That is right.

Q Can you tell me what would be an average mark-up percentage-wise from your knowledge?

A For an Mcf. of gas that costs 50 cents at the city gate?

Q Yes?

A Sold to what type of consumer?

Q Well, you pick one, Mr. Shattuck, you are more familiar with this.

A Well, let us say an industrial customer right next door to the city gate, for example, there would be very little mark-up necessary.

Q Let us take the distributor in the city of Toronto, then. What would you expect him to mark up on the average?

A That 50 cent Mcf. of gas he would probably sell, and I have made no investigation, understand, this is just ordinary guessing, you might say, based upon the knowledge of what other sales agents has done, he could sell that gas for somewhere in the neighbourhood of 75 cents to $1.00.

Q Yes. Could he sell gas at 75 cents to $1.00 to large industrial consumers and persuade them to change?

A Excuse me, I misunderstood the question. For certain purposes he could.

Q Not the big ones, though, would he, Mr. Shattuck?

A The kind listed in these exhibits, no, sir.

Q So the net result would be that he either would not get that industrial consumer or, in the alternative, the reduction to the industrial consumer would have to be made up on the commercial and domestic rates?

A I think you have jumped to a conclusion well beyond what I thought I was answering. In the first place, the gas which he sells to an industrial consumer is not going to cost him 50 cents. In the second place, he doesn't need a spread which might represent the spread to the ordinary

consumer to serve a large industrial.

Q His total costs are going to be 50 cents per Mcf., aren't they?

A Not for gas sold to an industrial.

Q Well, isn't that the average cost that we have arrived at in Exhibit 56?

A It is.

Q That is the average?

A That is right.

Q He has got to make an average of that amount per Mcf., the transmission company, in order to make these returns which are shown here?

A That is right.

Q And you say that if it were sold at 50 cents to the distributor you would anticipate sales prices of somewhere from 75 cents to $1.00 by that distributor?

A To the ordinary customer.

Q What would it be if he was selling that gas to industrial users?

A I suppose in the range of 40 to 60 cents.

Q It would vary from place to place?

A It might vary according to what the customer demanded of the distributor in the way of service. It might vary as to the installation that was necessary to serve it and the size of the delivery.

Q By the way, did you have in mind in making your survey that there would be flat rates charged to the various distribution companies or that there would be a zoning basis by the transmission company?

A By "flat" and "zoning", I am not sure what you mean.

Q I may have used the wrong terms, if you get my idea. By "zoning" I mean prices which vary depending on the position of the buyer along the transmission route and distance from the source of supply. By "flat rate" I had in mind charging the same rate schedule to each of the distribution companies as was suggested by the Northwest Natural, for example, here.

A I do not believe that the company has decided what they will do. What I had in mind was, and have suggested to the company, a price differential in approximately three partitions along the system.

Q Would you tell me about those, where the boundaries are?

A Well, approximately the Prairie Provinces would be first, the area which would generally be described between there and Toronto as the second, and the balance of the line as the third.

Q And can you give me some idea as to what the differentials would be?

A Those prices are now being discussed with some distributors, but I do not believe I am at liberty to disclose that.

Q Do you know what they are?

A Yes, I know what they are.

Q You know what they are?

A Yes, sir.

Q Will you tell me?

MR. PORTER: Mr. Chairman, as this witness has said, they are in the midst of bargaining. In fact, at one place we are bargaining with the very people

my learned friend is bargaining with. I don't think we will tell him.

Q THE CHAIRMAN: Would it be possible to break down the average transmission cost by zones?

A Yes, it would be possible. You would have to make a lot of assumptions, and I think the range of assumptions you make could be quite unrealistic each way.

Q I was going to ask you that question anyway, Mr. Shattuck. It might help in arriving at those prices. You say you are going to have three different zones. Could you then give us the transmission cost for each zone?

A Well, I have not considered it before. It was not a factor in the work that I did towards the rates but I believe there is one question which I could not decide which would be necessary to arrive at that, that is, to determine what portion of the cost each customer would be expected to carry. The average cost is very easy to determine because you have one ball of wax, you might say, with all the costs on it, but to attribute the cost of the pipeline to one area or another in the proportions, I believe would be just a presumption on my part.

Q You were going to have three different zones. You are not prepared to say what the difference in price might be between the zones?

A This sounds like hedging but I hate to say. I do have an idea what the difference in the prices between zones that are now being discussed are but that is not a difference in cost, that is a difference in price.

Q I do not think I follow you there, Mr. Shattuck.

A I do not believe that the differential -- at least, my portion of the work on the rates -- the differential is not at all based upon the differential in cost of handling the gas at that point.

Q In other words, you consider the transmission costs to be the same from here to, say, Regina or Winnipeg as they are to Toronto?

A Obviously they are not, but what part you would assign to each one, you would have to make that assumption. Now, I know of four or five methods of getting at that and any one of them would produce quite a different answer.

MR. PORTER: Maybe I could help. The difference is as clear to me as it could be. He said the price is not going to depend on cost. The price in these zones will depend on his competitive position. Cost may limit the area he can serve but cost won't fix his price except to keep him out of the market.

THE CHAIRMAN: There must be some kind of range in there, though, Mr. Porter.

MR. PORTER: Well, there could be a range, yes.

THE WITNESS: For instance, one of the computations that I used as a guidance in studying the differential between the eastern zone and the central zone, and this has not been necessarily accepted by the applicant, was to take the incremental cost of handling the gas after it left Toronto and taking it to Montreal, just like Mr. Ranson's exhibit here, taking that segment only. Now, that was one guide, but that is not necessarily

the cost. Adding that to the cost up to Toronto, the average cost, is not necessarily the cost of the project because it is entirely a joint venture, it takes all these sales to make the project hold together.

Q THE CHAIRMAN: Would the difference in price have any relation to the Btu. cost, say, in Winnipeg and Toronto?

A That was taken into account, yes, sir.

Q But you could not give us any idea of what the range would be in your transmission costs between the three zones?

A I believe that the category of my answer is "no" to that, sir.

Q You have not figured that out at all?

A Well, I have made a lot of figures, sir. I have estimated even what Western Pipelines' cost would be to deliver gas at Winnipeg as a matter of helping to set the rate.

MR. MARTLAND: I suppose you are willing to tell us that?

MR. C.E. SMITH: You can get one end of the range there.

MR. PORTER: That is easy because it stops there.

Q THE CHAIRMAN: Would the margin of the competitive fuels be about the same in the various areas?

A Yes, sir.

Q Does that help you at all, Mr. Martland?

MR. MARTLAND: It does not give me all that I have asked for, sir. I think we should have as much as the witness can give us with regard to this subject.

Q You are not prepared to tell us what these proposed rates are, Mr. Shattuck?

A No, I am not.

Q They have appeared in exhibits of other applicants, I mean, similar material.

A I do not know about that, sir.

Q Now, will you turn to Table 6 of your Exhibit 57, page 2. Would you just tell me what the interruptible load is there that you have in mind for Winnipeg, St. Boniface and Transcona? How is that 1367 figure made up?

Q You mean, how is it figured?

MR. PORTER: He wants to get some customers' names from you.

THE WITNESS: Is that right, Mr. Martland?

MR. MARTLAND: Well, I want to know the nature of that load, yes.

A THE WITNESS: The nature of that load is largely processing industrial use of fuel in that area.

Q And what type of fuel would be replaced?

A In the most part, coal and oil. I do not know whether they use wood in some of those plants or not, I do not remember. We did run into a few plants that used wood and I believe they are in that area.

Q Can you tell me what kind of coal it would be?

A Not offhand, no sir. Again, that would go into the nature of the information which was given to us on a confidential basis from the customers, the respective customers, let me say.

Q So that you can say that a good deal of the information

from which you say this exhibit was made is confidential and you can not tell us about that?

A I can tell you in aggregate if you wish me to prepare it. I do not have it right here at hand.

Q Can you tell me the price of the fuel at present, or does that appear in one of these many exhibits?

A The range of it appears in Exhibit 86 as of the dates of January and February, 1951, and is represented generally by data in the Exhibits 80, 88 and 89, 89 being the most recent information.

Q Now, what about the one at Regina, Mr. Shattuck, the 1598, what is the nature of that load?

A Substantially the same.

Q I see. What type of fuel would be replaced there?

A Oil and coal.

Q And can you tell me at what prices?

A The same exhibits would answer that.

Q When you refer to the processing load, does that include steam generation, Mr. Shattuck?

A Yes, sir, when steam is used in the operation of the plant as contrasted with building heating, for use like that.

Q Now, would you mind turning to Table 9, and I refer to page 2, still in Exhibit 57. Referring now to Winnipeg, I notice that you have a figure there for total consumers on your revised sheet and it was 29,054?

A That is right.

Q You knew that there was an existing vast distribution system in Winnipeg of manufactured gas?

A Yes.

Q Did you know they had 16,450 customers as of September 1950?

A The number of them has slipped my mind but I did know what they had and I took that into account.

Q And that there were a substantial number of dead services, some 7,000, did you know that?

A No. I called on Mr. Harris there and asked him for some information. I did not receive the information.

Q Your figure there may be somewhat low, Mr. Shattuck, your 29,000?

A Based upon the information I have been able to obtain, and going to every imaginable source, I think this figure is right.

Q I just have one or two more questions. Can you tell me what average consumption you had in mind with regard to residential space heating in Winnipeg as of the fifth year?

A I would like to have that question read. I am not sure I have it specifically in mind.

BY THE REPORTER READING:

"Q. Can you tell me what average consumption you had in mind with regard to residential space heating in Winnipeg as of the fifth year?"

A That is per customer?

Q Yes.

A I would estimate that a central heating plant would use about 215 Mcf.

Q And would you mind telling me your estimate with regard to those who do not use gas for space heating, that is,

domestic consumers?

A The domestic consumers who use gas for what purposes?

Q For purposes other than space heating, cooking and water heating?

A Cooking for an annual figure of about 11 Mcf.

Q And would you mind telling me what was your estimate as to saturation for space heating in Winnipeg for domestic purposes?

A I do not have that figure. It would take several minutes to figure it out. May I submit it later?

Q That is satisfactory, yes.

(Go to page 2473)

MR.MILVAIN: There are a few questions I have, sir.

THE CHAIRMAN: Yes.

.....

CROSS-EXAMINATION BY MR.MILVAIN:

Q I am looking at Exhibit 86, Mr. Shattuck?

A Yes.

Q Now, taking as an example the first item that there is there, I take it that is a comparison of the price of Eastern bituminous coal in Montreal, and in your last two columns you have under "Low" and "High",35 cents and 70 cents. And that is per million BTU?

A Yes.

Q How would that compare with gas per Mcf?

A I take it you mean, at what level would gas compete with those?

Q That is right?

A I would presume that the industrial user would be willing to pay a little bit more per million BTU for gas than he would for coal.

Q Yes?

A And, depending on the circumstances, I would make allowances from, say, for boiler use from 1 to 5 cents per Mcf. upward on the natural gas price, and for other uses, where control or maybe atmosphere in the process was important, maybe even more.

Q How many Mcf. of gas would it take to produce 1,000,000 BTU?

A About 1.

Q About 1?

A Yes. They are comparable units in this particular study.

Q What I am getting at is this, Mr. Shattuck, when one looks at a low range of 35 cents per million BTU, you might say that would give you a low range of 35 cents per Mcf. to compare with that on an even basis?

A Well, if you were a coal salesman I think you might say that, but if you were a gas salesman you might say 38 or 40.

Q You would use a little discount on the coal?

A I certainly would.

Q I, therefore, take it that that exhibit means that the various types of bituminous coal may be purchased at Montreal at a low price, which would cost 35 cents per million BTU, or a high price of 70 cents per million BTU, it is in that range?

A Those were the prices at which the industrial fuel consumers represented they obtained the fuel.

Q Now, did you make any estimate as to at what price you could land an Mcf. of gas at the burner tip of the industrial in Montreal?

A I do not know that I would dignify it by the word "estimate". I guess so. I had a figure in mind that, I believe, we can sell gas in the range of 40 to 65 cents in Montreal, to, that is, these types of industrial users which are represented in this study.

Q So that your feeling is then, that with regard to the type of industrial consumer that is shown in the first line of Exhibit 86, you would be able to deliver gas at about 65 cents per Mcf.?

A Between 40 and 65.

Q Oh, between 40 and 65?

A Yes, between 40 and 65.

Q Why is it that that range of price is between 40 and 65?

A Because we are competing or will be competing with a fuel that has a range of price which we will, of course, take advantage of.

Q So that you would contemplate that you would sell to different industrials at different prices?

A Yes, sir.

Q Did you ever make any calculation to determine what the proportion of the gas running through Trans-Canada pipe lines would be sold after you got to Western Ontario, as against that that is sold prior to getting to Western Ontario?

A I think that question was answered in the market survey by two tables which give a geographical distribution of the estimates, is that not correct?

Q Well, perhaps it is?

A May I refer you to, well, Table 4, for example. . .

Q That is Table 4 in your Exhibit 57, I believe it is?

A Yes.

Q Yes?

A If there were a sub-total between lines 32 and 33 on page 2, that, I believe, would answer your question precisely.

Q I see. So that if you were to draw a line there right under 31, and total everything above it, you would get. . .

A Yes, wherever you would like your sub-total. Port Arthur is the Western part of Ontario, and everything above that line is at or east of Port Arthur.

Q I see. Now, in making your estimate as to the market requirements of Western Ontario, did you take into consideration the contract between Panhandle and the Canadian Gas Company there?

A May I have that question read, please?

BY THE REPORTER: "I see. Now, in making your estimate as to the market requirements of Western Ontario, did you take into consideration the contract between Panhandle and the Canadian Gas Company"?

A The answer is "Yes".

MR.PORTER: I think we had better be informed as to what contract, we have heard about a lot of contracts down there, and I would like to know which one we are talking about.

Q MR. MILVAIN: I have heard about a contract, or talking about supplying 5½ million, is that the one that you had in mind?

A That is the one that I understood as being the one that is now effective.

Q So that in making your estimate of market requirements, you would deduct 5½ million from the total requirements.

MR.PORTER: 5½ billion.

Q MR.MILVAIN: Yes, Mr.Shattuck?

A I was wondering if Mr. Porter was answering my question.

MR.PORTER: I was talking to you myself.

A I did deduct it in this study from estimates which the Union Gas Company had presented. When you are asking me what is proper, what value that had at some later date, I believe it would be entirely proper if the circumstances are clarified in the matter with regard to the export that

goes into the area, and then to determine, as we did, how much more gas in their estimate could be sold.

Q I was just wondering, Mr. Shattuck, if in making your estimate of market requirements, you did deduct the 5½ million covered by that contract?

A I did.

Q Is it 5½ million or 5½ billion? These figures confuse me?

A It is billion cubic feet.

Q MR.PORTER: Per annum?

A Per annum, yes.

MR.STEER: 5½ million Mcf.

MR.MILVAIN: That is 5½ billion cubic feet per annum, is that right?

A That is right.

Q And do you know whether that has been the total that has been consumed in each year?

A It has never been delivered in that amount.

Q Never has been?

A No.

Q As a matter of fact, much less than that, isn't it?

A I believe about 3 billion last year.

Q I do not know whether these figures are right. You can correct me if I am wrong, whether or not these figures are right. I am informed that the deliveries for 1947 were only 37,841 Mcf.

A What year was that, please?

Q The deliveries aggregate 37,841 Mcf. for the summer period of 1947?

A Well, I do not know about that year.

Q 29,010 Mcf. for the summer of 1948?

A I do not know about that. I inquired about the last two years.

Q 998,300 Mcf. for the summer of 1949, and 2,900,000 for 1950?

A That is approximately the figure that I remember.

Q And you say that for 1951 that figure is something like 3 billion?

A Yes, sir.

Q So that there must have been a market need beyond that that you estimate, representing the difference between 5½ billon and what was, in fact, delivered?

A I am not sure I understand your question.

Q Well, you have taken the total market needs, as you could find them, deducting from them 5½ billion, isn't that right?

A That is right. That is, with one exception.

Q But there has been only a total in the highest year of some 3 billion supplied, so that there would be a deficiency there of about 2½ billion?

A I think there are two things wrong with that in the question and answer. May I attempt to clarify that?

Q Yes, if you will?

A One is that we made no estimate of the Southwestern Ontario area, we adopted an estimate made by the Union Gas Company and its associated companies in this deal, which estimate

was admittedly what they would do with a certain quantity of gas which they were able to obtain, and not what the market might take.

Q Yes?

A The other factor that I believe is wrong in the implication in the question and the answer, is that the future deliveries can be larger than the past deliveries. There are physical factors which lead me to believe that they are likely to obtain more gas in the future than they did in the past.

Q Yes? But the fact remains, does it not, Mr.Shattuck, that in making your estimate of market requirements, in making a deduction of 5½ billion, there has been an error in it to the extent of the under-delivery below 5½ billion?

A I do not agree to that, sir.

Q You do not agree to that?

A No, that is what I thought I was explaining just previously.

Q I see. Perhaps I just did not see through the explanation. However, it seems to me that if you make an estimate on the basis of making that deduction, and you do not get that amount of gas, there must be a shortage somewhere?

A That is not correct, because in the interim there has been completed additional facilities, both on the part of Panhandle and on the part of Union, to take more gas.

Q Now, I suppose, too, in making your market survey, and deciding the feasibility of selling gas to the market you found, you also took into consideration the evidence or the conclusions which were drawn by Mr. Ransom as to the cost of the whole system in amortizing it over a period of 25 years?

A Yes, I have.

Q And that you would, therefore, seek a delivery of gas over

a period of 25 years to go through the system?

A I believe that the answer to that is that I assumed that gas would be available for at least 25 years.

Q Yes. And, as I understand one of your exhibits, that by the time you get to the end of the fourth year, your deliveries have reached a total, I think, of 113 million, or is it billion?

A It is billion cubic feet.

Q It is billion cubic feet?

A Yes.

Q So that at that time you then reach the point where the supply of gas sought under the permit has reached this maximum point, and you cannot go beyond that without more gas?

A That was not the limiting factor, sir.

Q Well, then, from the limiting factor, as I understand it, your market survey indicates that deliveries of gas will be required to serve your customers of that 113 billion or million is it?

A Billion cubic feet.

Q Billion cubic feet?

A Yes.

Q That is correct, is it?

A We have estimated that the sales will reach 113 billion cubic feet at that time and be limited because the project, that is,the physical capacity of the project which was given to us at the time we were making that study would, in all probability, prevent the pipe line from selling more gas than that.

Q Yes?

A I understood that at the same time the request for export was in the neighbourhood of some 124 billion cubic feet per year.

Q There would be a certain amount of loss in your line below the amount that your system would carry?

A That is the sales capacity.

Q The sales capacity?

A Yes. Both those figures were sales capacity, and if the system could handle more gas at the same time in about, I cannot say the year exactly without looking it up, but say the sixth or seventh year, it would easily take that.

Q So that we are, in fact, up against this practical situation where the operations of your Company were drawn on a rising plane for a period of four or five years until you reach the point that you were using all the gas that you had, and then it would have to level off for the balance of the 25 years?

A It would if you did not obtain more gas, yes, sir.

Q Now, therefore, if the system were to continue to grow, as one would expect it to do, it would be essential that further gas be obtained?

A It would not be essential; it would be highly desirable and profitable to find more gas.

Q But the system would not be able to grow beyond the four or five or six years unless you got more gas?

A It does not need to grow, sir.

Q The fact is that it could not grow unless you got more gas?

A That is right.

Q That is correct?

A Yes.

Q You would normally expect such a system to grow, wouldn't you, Mr. Shattuck?

A Well, it could grow in this market.

Q Yes. The market is there within which to grow?

A Yes, sir.

Q So that there would be a field of expansion available to go into?

A Yes, sir.

Q But unless you got more gas your ability to go into it would be limited?

A That is right.

Q And, of course, unless your system grew to take on the normal increment of customers, it would not be giving a proper service to the community?

A I do not think that follows.

Q You do not think that follows?

A No, sir.

Q You would not say it was giving a good service to the community unless it was taking on customers that wanted the service, would you?

MR.PORTER: What community are you talking about?

MR.MILVAIN: Oh, any community.

MR.PORTER: Because I am rather interested in my learned friend's line of examination. We are talking largely east of the Great Lakes, about an area in which Alberta coal has no conceivable interest under existing freight structures, and I am wondering how the bituminous, and the domestic and the United Mine Workers of Alberta could be interested, and, frankly, I am wondering how they happen to be represented by counsel of like interests that are

affected, but whose business is it in the United States of America, in the coal-producing areas which serve Ontario? I welcome them here, but I would like them here in that capacity. Now, the railroads, the coal hauling railroads, the railroad Union men who work on them and the mine workers who work in the mines there, whose solicitor, I understand,is here, and if the examination is in their behalf and directed to that issue, we will deal with it, but if it is being directed from the point of view of Union men,workers and local coal producers, then I do not know why we do not discuss Europe, it would be just as relevant.

MR. C. E. SMITH: Let us not extend any more invitations.

MR.PORTER. I am in favour of that.

MR.MILVAIN: I am quite sure, Mr. Chairman, that the question raised by Mr. Porter will be answered by the clients that I represent. The answer is simple, and the one that I will give now will be much enlarged on. The whole of the coal interests in the West, that is, the producers and the mine workers, are extremely interested to know that gas will be here in Alberta to serve our future industrial expansion, because we know that we will find our place in it. We want to make sure that it is not going to be tied to the wrong end of an uneconomic scheme.

MR.PORTER: By the guarantee of permanent displacement of coal in Alberta?

Q MR.MILVAIN: If I can get back to where we left off, Mr.Shattuck. We were discussing the question of whether or not it was your opinion that you would be giving

an adequate service to any community into which you go if you have a system that is incapable of meeting the needs, all the expanding needs of the community. Do you think that is so?

A I think you must judge the service to be given by the use to which it is put. My test of adequacy of service to these communities is quite simple. For a periodfof time,a long ways into the future, from 15 to 25 years, this pipe line can fully supply the residential and commercial and firm industrial users that are customarily attached to a natural gas system. In the interim it will be able to sell, I believe, competitively with other fuels, a type of service which is not essential to those communities, but is desirable both from the standpoint of the pipe line and those communities. And if there is insufficient natural resources in Alberta to continue to supply that class of customer a longways into the future, then that can be discontinued with very little harmful effect upon the community. Of course, I do not personally believe that the reserves are so limited that that will happen.

Q But perhaps you will agree, Mr.Shattuck, that if there should be any danger of a limitation, it would be much easier to attach the Alberta gas to a use that it can fulfil than one it cannot?

A I believe it is attached to that. In estimating the position, this applicant took into account what it could continue to serve over a long period of time as far as the firm load is concerned. If it had not been able to supply that territory adequately, I am sure it would

have curtailed the territory.

Q Very good, Mr. Shattuck, thank you.

THE CHAIRMAN: We will adjourn until tomorrow morning.

(Hearing adjourned until 9.30 A.M., December 5th, 1951).

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The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD

IN THE MATTER OF THE GAS RESOURCES PRESERVATION ACT

AND IN THE MATTER OF the application of Westcoast Transmission Company Limited and Westcoast Transmission Company Ltd. (Alberta Incorporation) for a permit authorizing the purchase and sale of Natural Gas in the Province of Alberta for transmission to points in the Province of British Columbia and the States of Washington and Oregon in the United States of America.

I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

Session:

Volume_____